

A Polytheistic Conception of the Sciences and the Virtues of Deep Variety

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PROFESSOR WILSON'S SERMON

"Can we actually 'know' the universe? My God, it is hard enough finding your way around in Chinatown" is a line from one of Woody Allen's books. The line seems appropriate on this occasion, and not only because we are meeting in Manhattan. I think there are many problems with the gospel of "consilience." I have doubts about its "unification metaphysics" (material determination, all the way down) and its "unified learning" pedagogy (with its emphasis on one particular, even peculiar, "natural science" conception of knowledge).¹ And I confess that I am quite dubious of attempts to spread the word of "science" or promote the quest for knowledge in the human sciences under its name.

Members of the faith of consilience believe that we are now (for the first time, or finally—or is it once again?) on the threshold of (as T.S. Eliot put it, skeptically summarizing the creed) "rolling the universe up into a ball" (quoted in Converse²). Perhaps that is why I experienced the written version of Professor E.O. Wilson's keynote address for this gathering on "The Unity of Knowledge: The Convergence of Natural and Human Science" as a kind of "good news" monotheistic sermon. In effect Professor Wilson invited us to return to an old-time state of pre-Kuhnian, pre-Wittgensteinian, pre-Quinean, pre-Rortyeian innocence (see Kuhn,³ Quine,^{4,5} Rorty,⁶ Wittgenstein^{7,8}). Listening to last night's homily on the nature of human understanding and intellectual curiosity, one might never have imagined that the Enlightenment idealization of the sufficient conditions for producing knowledge ("an innocent eye" plus a logic machine) has pretty much been dismantled (or at least seriously critiqued) over the past 200 years. One might never have thought to doubt the speaker's conviction that unification and convergence of belief are the criteria of maturity in scholarly disciplines. Where T.S. Eliot was skeptical, Professor Wilson remains pious.

There are other skeptics. Clifford Geertz is a cultural anthropologist who specializes in the interpretation of behavior and who describes his intellectual aim as "ferreting out the singularities of other peoples' ways-of-life."⁹ (p. xi) As a psychological anthropologist and cultural psychologist, I have that as my goal as well. Professor Geertz writes about the field of psychology (which was once known as the science of the soul, is now called the science of the mind, and is scripted to become the science of the body in Professor Wilson's augury for the future) as fol-

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lows: “We are not, apparently, proceeding towards some appointed end where it all comes together, Babel is undone, and Self lies down with Society.”

Apparently Professor Wilson disagrees and his visions stretch far beyond psychology per se. He still dreams Enlightenment dreams of connecting anything and everything (Chinatown and the whole universe) “in a common skein of cause-and-effect explanation”¹⁰: validity, simplicity, and unity “all rolled up in a ball.” In his book entitled *Consilience: The Unity of Knowledge*, Professor Wilson writes of it as an “epiphany” or an “enchantment” that freed him from his Southern Baptist upbringing. I have my doubts. He describes the typical devotee of “consilience” as being “under the spell” [his expression] of “a hoped-for consolidation of theory so tight as to turn the science into a ‘perfect’ system of thought, which by sheer weight of evidence and logic is made resistant to revision.” In the written version of his keynote address, he described the natural sciences of the new millennium as having nearly reached a state of perfect consilience.¹⁰ He expressed his conviction that the social sciences and humanities could be similarly unified, with each other and with the natural sciences, under the banner of biology. He wagered that the royal road to such a comprehensive consilience—a “resistant to revision” eternal or final solution to all debates and disputations about culture and mind, what might be called the academic “end time”—would come through work on brain science, human genetics, cognitive psychology, and biological anthropology.

I have my doubts. I would suggest that the idea of consilience—the idea of a seamless coherency and of systematic interconnections across culture, mind, and body; across intellectual disciplines; and across units of analysis neatly arranged into decomposable levels of material organization—is far more fictional than factual. At the very least I would suggest that consilience is not a very good description of the current intellectual scene across the human and the nonhuman sciences.

I recognize of course that, rather than dismissing the idea of consilience as a fanciful description of the current intellectual scene, it is possible to construe the notion merely as a utopian ideal for guiding research. Even so, I would hope that the aspirations of the members of the church of consilience remain denominational in character and that those ideals are understood to be useful for some intellectual projects but not for others. Why? Because Professor Wilson’s ecumenical and monotheistic quest for a consilient unification of knowledge overidealizes one very special and rather limited (even limiting) type of knowledge, the type of knowledge where observations and logic alone make it resistant to revision. There is no universally binding reason to privilege that particular ideal of knowledge; and that ideal, while perhaps serviceable in some contexts, may actually get in the way of many valuable forms of systematic inquiry in the human sciences, and perhaps even in the nonhuman sciences as well. Or at least that is the pluralistic or polytheistic conception of human understanding that I would like to put on the table for discussion.

POLYCENTRISM OR CONSILIENCE?

I think it is instructive (by way of contrast to the dogma of consilience) to take a closer look at Clifford Geertz’s description of the state of play these days—the actual realities of scholarship and the way interpretative communities are functioning—in the sciences and the humanities. One can find this account in his

recent collection of essays entitled *Available Light* (already compare the tone and implication of that title with those of the title of E.O. Wilson's book). Professor Geertz writes, "The homogenization of natural science, both over time and across fields, as a constant other, an 'opposing ideal' permanently set off from other forms of thought, as Richard Rorty has put it, 'by a special method [and] a special relation to reality,' is extremely difficult to defend when one looks at either its history or its internal variety with any degree of circumstantiality."⁹ (pp. 145–146) He continues: "There is indeed some evidence from within the natural sciences themselves that the continental image of them as an undivided bloc, united in their commitment to Galilean procedures, disengaged consciousness and the view from nowhere, is coming under a certain amount of pressure."⁹ (p. 150)

Professor Geertz is impressed by the "localness" of the knowledge systems constructed by different cultural communities (including scientific communities). He is clearly suspicious of both fanatics and infidels in the academy. In the place of both the hypermodernist total-systems builders and the radically skeptical antisience postmodernists, he asks us to take seriously the image and the reality "of a loose assemblage of differently focused, rather self-involved, and variably overlapping research communities in *both* the human and natural sciences." (That description, I would suggest, is a pretty good characterization of the collection of presentations that we have heard at this conference).

Professor Geertz invites us to abandon a conception of "two continental enterprises, one driven by the ideal of disengaged consciousness looking out with cognitive assurance upon an absolute world of ascertainable fact, the other driven by the ideal of an engaged self struggling uncertainly with signs and expressions to make readable sense of intentional action." In other words, the story of the academy is not about "two cultures" (the "sciences" versus the "humanities"). Neither is it about just one imperial culture (to pick some random examples, human genetics, sociobiology, or cognitive neuroscience) taking over all the others. Reflecting on claims about the "unity of knowledge" Clifford Geertz doubtfully asks (quoting the philosopher Richard Rorty) "what method is common to paleontology and particle physics? What relation to reality is shared by topology and entomology?" Such questions, he argues, are hardly more useful than asking "is sociology closer to physics than to literary criticism?" or "is political science more hermeneutic than microbiology, chemistry more explanatory than psychology?"⁹ (p. 150)

I happen to share Professor Geertz's view of the current intellectual scene. When invited by the New York Academy of Sciences to attend this conference, I wrote: "I am pleased to accept your invitation, although I feel that I should give you some warning that I am quite skeptical of much that is presupposed and implied by the title and subtitle of the meeting. I do not think there is unity either between or within the social and natural sciences. I am not even confident there is unity within biology, although there certainly are similarities between the way certain sorts of biologists and certain sorts of social scientists think about the world."

The similarities and sorts I had in mind were the reductive systems-building modernists in the natural sciences and human sciences. They share a mode of explanation and style of research. Nonreductive "top down" holists, interactionists, and contextualists in the natural sciences and human sciences share a mode of explanation and style of research as well. So there are parallel or comparable splits within the natural and the human sciences. The field of plate tectonics, for example, according to the

geologist Frank Richter,¹¹ makes “no reference to laws of motion even though it describes motion”; is bound to historical circumstances; and has more in common with some varieties of social science scholarship than with some versions of physics.

Biology is not homogeneous either. And as we witnessed in this conference, there are conflicts over some rather fundamental issues in that territory of knowledge. Some of this rather spirited debate was in evidence in the session entitled “Beyond Nature–Nurture,” which was hardly a “consilient” event. There appear to be a few items on the “nature–nurture” agenda that remain unsettled: minor things, such as how to think about the very distinction between genes and environments, what precisely it means to say “it [intelligence, a fear of snakes, Catholicism] is all in your genes,” and how to properly measure gene–environment interactions, assuming the distinction between genes and environments can be made precise and coherent in the first place (which, according to some biologists, is very much in doubt).

One thing that is not in doubt is that it is an oversimplification to say that there are only two types of biologists, although at least there is more than just one. The first type is biologists who conceptualize “phenotypes” in terms of “epigenetic complexity.” They focus their research on interactions “between genes, between genes and gene products (proteins), and between all these and environmental signals, including, of course, the individual organismal experience” (see Strohman,¹² p. 114). (Richard Strohman has written a critique of the genetic paradigm in biology and medicine in which he makes the points that 98% of diseases are not monogenetic, and that, although there is a genetic basis for “speaking French,” there probably are no “speaking-French genes.” Or if there are “speaking-French genes,” it is only in the sense that there is a genetic basis for being a human being who is capable of learning French. This is a very old point, but apparently it still needs to be made.) The second type is biologists who talk the talk of “genetic reductionism” and speak the language of direct gene–trait pathways (whether monogenetic or polygenetic, whether simple or complex—in principle, if not in practice, they think they can handle, which means simplify, any complexity that comes along). To identify only two types of biologists is obviously overly simple, but the distinction is revealing. Many of the (type 1) “epigenetic” biologists are suspicious of genetic interventionism and have rather ambivalent feelings, at best, about the Human Genome Project. Many of the (type 2) genetic reductionists deeply believe that they can make the world a better place through selective alterations in the genetic endowment of particular members of our species. So they promote the Human Genome Project as the paradigm for medical and behavioral research. My main point, however, is this: Whether you are for them or against them, or whether you believe or disbelieve (like or loathe) the message that successful people and their offspring do better in life because they have better genes, there is more than one contentious voice out there, even in biology.

I concluded my response to the Academy’s invitation to attend this “Unity of Knowledge” conference as follows. “And I have some doubts about whether the ideal of substantive ‘unity’ across the natural and human sciences is any more attainable today than 200 years ago. I even think it is an open question whether (for the sake of human progress and the progress of knowledge) the ideal of substantive unity of belief is even truly desirable. Given those caveats I look forward to a lively meeting in June.”

A similar vein of thought is found in *Available Light*. Focusing on the field of psychology, broadly conceived, Clifford Geertz sees little “consilience.” He writes:

“Paradigms, wholly new ways of going about things, come along not by the century, but by the decade, sometimes, it almost seems, by the month It takes either a preternaturally focused, dogmatical individual, who can shut out any ideas but his or her own, or a mercurial, hopelessly inquisitive one, who can keep dozens of them in play at once, to remain upright amidst this tumble of programs, promises and proclamations.” (Geertz,⁹ p. 188)

Programs, promises, proclamations: “the unity of knowledge,” “the convergence of the natural and human sciences,” “the new synthesis.” What Geertz thinks we are witnessing, at least in psychology and the cognitive sciences, is not some deep unification of knowledge but rather a rapid proliferation of what Thomas Kuhn called disciplinary matrices: “loose assemblages of techniques, vocabularies, assumptions, instruments and exemplary achievements,” some of which are original and creative, some of which are incommensurate with each other or semi-independent of each other, some of which are mutually stimulating. No common project—rather “half-ordered, polycentric collections of mutually conditioned projects,” with no ultimate “consilience” in sight.

The contrast between Professor Wilson’s and Professor Geertz’s conception of human knowledge and knowledge of humans is dramatic. Unreconstructed and unfazed in substance, monotheistic and modernist in spirit, Professor Wilson offered us in his keynote address¹⁰ the Enlightenment picture of science as a distinctive and superior mode of thought that is leading us to a new synthesis linking culture, mind, and body. This time around (and we have been around this issue many times both before and after the Enlightenment) it would appear that the bygone and misconceived idea of a reductive “social physics” is now going to be replaced by the fashionable new idea of a reductive “social biology,” based on a set of universal truths generated out of cognitive neuroscience, human genetics, biological anthropology, and a species typifying cognitive psychology. (As an aside I would note that for some reason the expression “it is not rocket science” has not yet been replaced in popular discourse by such phrases as “it is not brain science” or “it is not genetic engineering.” Perhaps this is just a case of cultural lag, and the popular recognition of a shift in scientific prestige from nuclear physics to microbiology is only a matter of time. Or perhaps the public is waiting to see whether the Human Genome Project is actually going to realize its quite benevolent medical dreams or will turn out instead to be a eugenics nightmare or else just a very expensive dead end.)

In any case whatever one thinks of Professor Wilson’s “Enlightenment” picture of how science works (or ought to work) (or of its potential public relations appeal, for example, to funding agencies or to readers of the *New York Times*), I submit it is not a good depiction of the current intellectual scene. Clifford Geertz’s “polycentrism” (rather than E.O. Wilson’s “consilience”) is the descriptive and normative term that rings more true. I shall try to briefly illustrate what I take to be the polycentric realities of the current scene with some casual glances in a couple of directions.

A NONCONSILIENT TRUTH

Before glimpsing at some local scenes, however, let me confess that the most rock bottom truth in my own conception of the human relationship to knowledge (including knowledge of human beings) is fundamentally nonconsilient. I associate this

truth with an approach to understanding I call “confusionism” (not to be confused with Confucianism). According to this nonconsilient “confusionist” truth, the knowable world is incomplete if seen from any one point of view, incoherent if seen from all points of view at once, and empty if seen from “nowhere in particular.”

Given the choice between incompleteness, incoherence, and emptiness, the best option is to opt for incompleteness, staying on the move between different points of view. The best option is to go ahead and see what each point of view (each genuine cultural tradition, school of thought, theoretical position) illuminates and what each hides, while keeping track of the plural (some might say polytheistic) character of the humanly knowable world. Coherence can sometimes be achieved, but only within the limits of particular points of view. Findings of great generality across all human beings can also sometimes be uncovered. However, in the human sciences at least, these universal generalizations are often bought at the price of describing the world of culture and mind at a level of abstraction so distanced from lived realities that they are devoid of sufficient content and meaning and have little predictive utility. For example, the psychologist Charles Osgood long ago proposed a simple universal code for characterizing the way all human beings evaluate all objects and events in the universe. They do it, we do it, he proposed, by asking of every object and event three questions: “Is it good or bad?” (Osgood called this the “evaluation” dimension); “Is it strong or weak?” (Osgood called this the “potency” dimension); and “Is it fast or slow?” (Osgood called this the “activity” dimension).¹³ The problem is that this universal code is theorized at such a “high” level of abstraction that it classifies “God” and “ice cream” as equivalent, because they are both judged to be “good,” “strong,” and “active.” As you can see, a bit too much gets lost in this type of search for universally valid generalizations. That is a common shortcoming (the shortcoming of emptiness) of propositions in the human sciences that are designed to be statements about culture and mind true of all human beings.

The “consilient” aim of synthesizing different points of view is, of course, not inherently evil, but it is equally important to recognize that if different points of view could be fully integrated or synthesized, they would not count as different points of view. There *are* times when the supposed difference between two or more points of view is more illusory than real and at such times a limited “unification” of knowledge may be possible, but not always or even often when it comes to the types of issues that arise when one examines the links between culture, mind, and biology. In this very broad domain the so-called mind/body (or the mind/brain) problem continues (along with other major issues) to be a major problem, and, despite many claims to the contrary, no real resolution is in sight. That is one reason why all interdisciplinary meetings that bring together brain scientists interested in “organic matter” (and how it functions) with humanists and social scientists interested in “matters,” meanings and mental states (and how they function) do indeed seem very much like the tower of Babel. Or else at such conferences a fake sense of “consilience” is achieved by actively repressing any real tower of Babel effect. Typically this fake sense of consilience is a by-product of either (a) not knowing or caring very much about what other researchers are really doing or what they really think (just paying attention to the things you are looking for can also produce a sense of unity) or (b) formulating propositions at such a “view from afar” level of abstraction that most of the things that are of interest to social scientists and humanists disappear

from sight or (c) by sharing words in common—like “mind” or “mental” or “cause” or “behavior”—without ever asking what those big words actually or precisely mean.

MINDS AND BRAINS IN BREMEN

Here is a description of my first glimpse at the current scene: While residing in Germany this past academic year (where I was a Fellow at the Wissenschaftskolleg zu Berlin), I attended a major interdisciplinary conference held in Bremen on the subject of “voluntary action.” The experience typified for me the way “consilience” works (or more accurately does not work) as a description of the current intellectual scene in the cognitive sciences. The conference featured philosophers, cognitive neuroscientists, psychologists, and anthropologists. All were there in Bremen ostensibly to explain the fact (or is it just the phenomenal experience? That is the question!) of voluntary action.

“Voluntary action” is a nice topic for an interdisciplinary meeting. As the conference organizers (Wolfgang Prinz, Gerhart Roth, and Sabine Maasen) brilliantly pointed out in their invitation:

Voluntary action...poses a severe challenge to scientific attempts to form a unitary picture of the working of the human mind and its relation to the working of the body. This is because the notion of mental causation, inherent in the received standard view of voluntary action, is difficult to reconcile with both dualist and monist approaches to the mental and the physical. For dualist accounts it has to be explained what a causal interaction between mind and matter means and how it is possible at all. Conversely, for monist approaches the question of mental causation does not arise and therefore appears to denote a cognitive illusion at best. Dualist and monist accounts can be found in all the disciplines mentioned above [cognitive psychology, neuropsychology, philosophy, ethnology], albeit in different phrasings and/or theoretical frameworks. Moreover, in virtually all disciplines this seemingly insurmountable opposition is [a] subject of ongoing debate.

So “voluntary action” is a challenge for both mind/body monists and mind/body pluralists (of which mind/body “dualism” is just one variety). If you are a mind/body monist (and at such conferences the “monists” are all “materialists”; apparently the “idealists” are either hard to find or are not invited), then the “voluntariness” of “voluntary action” must be an illusion. That, of course, is the spectacular and breathtaking (or should we say “dis-spiriting”) implication of mind/body monism; namely, the renunciation of all of folk psychology and the claim (*involuntarily* arrived at and offered, I suppose, at least according to mind/body monists) that mental states (including one’s own truth claims about mental states) are epiphenomenal and have nothing to do with the chain of real events that causes behavior.

You raise your hand in a situation in which you thought that your desire to signal the teacher that you wanted to try to answer the question he or she just posed to the class was the reason that you deliberately, willfully, or “voluntarily” raised your hand. In a folk-psychological sort of way, you thought that deliberately communicating that intention was what your hand-raising action was all about. “Not so!” says the mind/body monist. Your hand raising was the end product of material determinants at the neural level, where a human will (and indeed even a human self) cannot be observed, and where ideas *qua* ideas do not exist, and hence can play no causal role in the movement of your hand. Given our contemporary received understanding

of the nature (physics, chemistry, and biology) of the material world, that is how mind/body monists think they must talk about so-called “voluntary action.” They talk of it as an epiphenomenon.

But this leaves the mind/body monists (it’s all body, no mind) with a whole lot of explaining to do. Why should such a complex epiphenomenal system (amounting to all of human consciousness and its products) exist at all? How could it evolve, if it plays no causal role in behavior? Are the ideas of agency, virtue, and human responsibility then incompatible with the “consilient” teachings of the physical and biological sciences? Should folk psychology (including all the literary, moral, legal, and social science disciplines premised on such notions) be banished from the unified curriculum, except perhaps as examples of error, ignorance, and superstition?

Mind/body dualists fare no better when it comes to making sense of “voluntary” action. As an aside I would point out that almost all cognitive neuroscience research programs become tacitly dualist as soon as they treat something mental as an “independent” variable and something neurological as a “dependent” variable, or vice versa. In other words, just to carry forward their research agenda, they implicitly, usually unselfconsciously, distinguish “thoughts” (or “ideas”) from “things” (or neurons) and identify them using ontologically distinct types of criteria.

In any case, if you are a reflective mind/body dualist, you must explain how something that is immaterial (e.g., the mental state associated with choice, planning, free will, and intentionality) can influence or have an effect on something that is physical (the movement of one’s hand). So there is a real and deep problem here with our current understanding of “voluntary action”; and at Bremen an interdisciplinary conference was organized to make some progress on resolving it, in the light of recent research in cognitive neuroscience, psychology, and anthropology, with some assistance from the philosophers. Here is the way “consilience” operated in that context.

The philosophers were really good at defining the mind/body problem. And each philosopher was terrific at arguing in favor of just one of the several incompatible solutions (interactionism, psychophysical parallelism, reductive materialism, etc.) that have been contenders, while at the same time advancing compelling criticisms against all other “solutions.” Not much convergence took place among the philosophers; but at least they knew what the problem was, and they tried to address it.

The neuroscientists, on the other hand, came armed with lots of colorful slides, showing this or that brain part lighting up when this or that kind of action took place or sentence got spoken. They named lots of brain parts, and they spoke with great confidence and with a sense of pride and excitement about the technological revolution that had taken place on their watch, which had finally made it possible, or so they thought, to empirically solve the mind/body problem. After seeing about 10 slides, I began to realize that these neuroscientists probably had never read Descartes and seemed to think that Descartes would be surprised to find out that when thinking occurs something happens somewhere in the nervous system. After about 20 slides, I began to realize that they did not really know what the mind/body problem was in the first place. But they had an imagined solution to the problem, which seemed to excite them a great deal. Upon examination, this “solution” was simply a form of question-begging in which the very real puzzle of how a nonmaterial thing and a material thing can causally interact is “solved” by simply substituting a Humean notion of “causation” for the sense of “causation” that makes the problem a problem in the first place.

Here I merely restate a philosophical commonplace. Sir David Hume was a radical empiricist for whom knowledge had to be based on sensory experience to count as knowledge at all (and hence only seeing is believing). According to Hume's epistemology, the belief in any underlying or inherent causal process is mythic or illusory, and "causal" claims are just reified projections of mental associations. In other words, the empirical world (the perceivable world) is devoid of underlying "causes," and causal claims should be thought of merely as psychological habits or manners of speaking about subjective impressions that are formed by the perceptions of things and events that are co-occurring in time and space. For Sir David Hume, that is all that counts as knowledge: things and events that are observed and located in time and space. The "cause" itself, however, cannot be seen; and hence for Hume, the radical empiricist, it is excluded from his positive "science." The neuroscientists "solved" the mind/body problem by being Humean in their conception of causation, because for them (it became apparent after 20 slides) mind/body "causation" amounted to little more than the observation that the brain lights up here and there when a person does this or that. This, of course, is hardly a *theoretical* advance over Descartes. But they kept going, slide after slide demonstrating that the mind/body problem had been empirically solved! After 100 slides the only ones awake in the audience (or at least the only ones who really benefited from the presentation) were the other neuroscientists (who were quite genuinely and legitimately interested in questions about the details of brain localization) and a few others who liked the pretty pictures.

Then there were the psychologists and the anthropologists. They generally *presupposed* the reality and causal powers of mental states and their ideational content (in other words they had not expunged folk psychology from their scientific work), and they described the operation of that folk psychology in some detail. One psychologist did present reaction-time evidence, all of it equivocal, trying to prove that mental states are unreal and have no causal powers. In the end the mind/body problem remained unsolved, when acknowledged, or it remained untouched, but was innocently thought to have been solved by the new technologies for mapping the brain. In the end the everyday experience and/or reality of "voluntary action" remained as mysterious and fascinating as ever.

"MATTER" AND "MATTERINGS" IN THE HUMAN SCIENCES

My second glimpse is a quick look at the crisis literature in the human sciences. This worry about the state of the human sciences compared to the "natural sciences" goes up and down, and when it is up there emerges a "crisis literature." Before examining this literature, however, let me state up front that I think that social science research institutions are pluralistic hotbeds of creative and useful activity. I myself share with Philip Converse² and others the view that disciplined inquiry (use the honorific term "science" if you like) consists of "the systematic decoding of observed regularities and the reduction of the regularities to more parsimonious and general principles that account for wide ranges of phenotypic detail." There is plenty of this type of work going on in the social sciences, and whether or not it moves in the direction of "consilience," much of this work is exciting and useful.

I myself have tried to contribute to the enterprise in various ways. I work on the cultural psychology of morality, the cultural psychology of the emotions, the cultural psychology of gender, the cultural psychology of illness and suffering, and the meaning of family life practices (such as sleeping patterns, dietary practices, and coming of age ceremonies for boys and girls) as well as on various other issues concerned with the character and social origins of *differences* in psychological functioning across cultural communities. Reports on the substance of this work are available for those who are interested (see, for example, Shweder,^{14–16}; also Shweder and LeVine¹⁷; Shweder and Fiske¹⁸; Shweder, Much, Mahapatra, and Park¹⁹; and Shweder and Haidt²⁰), but my concerns today go well beyond the discussion of this or that discovery. Any consideration of the substantive issues or questions that concern me—the “big three” domains (autonomy, community, divinity) of moral reasoning around the world, the way moral ideas are made manifest and expressed in mundane social practices such as who eats with whom and who sleeps with whom (that story, by the way, goes well beyond the “incest taboo”), why the emotions that are most valued are not the same from culture to culture, or how the experience of “loss” does not result in the same psychological or somatic response from society to society or even person to person—must wait for another, less weighty, occasion.

Nevertheless, one of the things I have discovered from my substantive work in cultural psychology is this. The ideal of systematically observing and decoding regularities does not imply that the most useful, significant, or even discoverable generalizations in the social sciences are going to be those that characterize all human beings. As Edelson²¹ has remarked, “not all hypotheses of interest to a scientist are universal generalizations.” Indeed, I believe that some of the most reliable, useful, and significant generalizations in the social and psychological sciences are those that are rather restricted in scope and are “firmly wedded,” as Philip Converse² might have expressed it, to historical, cultural, and institutional circumstances. Rural Oriya Brahmans in India will react *this* way, for *these* reasons under *these* circumstances, which is not the way middle-class Anglo-Americans will react, and for *these* reasons.

Nor must one assume when undertaking the project of disciplined inquiry in the human sciences that real things must exist independent of point of view if they are to be considered “really real.” The realm of “culture” is a realm occupied and preoccupied with real things—touchdowns, in-laws, child abuse, weeds, the Christmas season—that do not exist independently of the point of view of some specific interpretive community. That is one of the reasons that some of the most reliable and predictively useful generalizations about human behavior are restricted in scope.

Nor must one assume that the reality of such things is adequately captured from a purely “naturalistic” or “materialistic” point of view. Professor Wilson states in the written version of his keynote address: “*After all*, [emphasis mine] mind and culture, which are the subjects of the social sciences and humanities, are material entities and processes. They do not exist in an astral plane above the tangible world, and are therefore intrinsically open to analysis in the natural scientific mode.”

I find this statement both remarkable and revealing. The current discourse across the sciences and humanities about the character and reality status of culture and mind, I would suggest, is far from “consilient.” Yet Professor Wilson seems so untouched by the nature of this discourse that a proposition that has been problematic

for 3000 years and soundly rejected by many, perhaps most, interpretive social scientists, and for good reason, is asserted as though it were common sense (“After all...”). What do cultural meanings as meanings (for example, the idea of “sin”) or cultural meanings as made manifest in cultural artifacts (for example, a “weapon” or a “weed”) actually look like from a purely material point of view? Is it from a purely material point of view that their very identity is established? For example, a “utensil” and a “weapon” may be indistinguishable (it is the same “knife”) from a material point of view. Reference to some nonmaterial element such as a human purpose or a human aim or a human practice may be required to even identify them in the first place.

This is not a topic I can examine here in any detail, although you can see the shadow of the mind/body problem once again; and I hope you can see how readily many empirical scientists manage to avoid the central issues. Here let me simply invoke the work of Karl Popper, the well-known 20th century philosopher of science, as a corrective to Professor Wilson’s rather dubious (in my view) assertion that the subjects of the social sciences and humanities are tangible, material, and intrinsically open to naturalistic inspection. Karl Popper believed in three worlds (a world of material objects, a world of subjective mental states, and a world of collective meanings), not just one. And he was deeply critical of monistic World 1 approaches of the type advanced by Professor Wilson.

“Mind” and “culture” refer to “ideas” or “meanings” accessible to the mental processes of individual human beings and made manifest in the practices—including linguistic practices—of interpretive communities or social groups. If “mind” and “culture” exist at all in the sense that those who study mind and culture think they exist, then certainly they exist in a way that is different from the mode of existence of mere material objects. That, of course, is one big part of what the 3000-year-old argument about the reality status of “ideas” is about. Can a World 1 science go all the way? The argument is about whether “ideas” and the mental processes that make them available to human beings actually have more than just a World 1 material existence and need to be understood in a different sort of way, as ideas and mental processes per se. It seems to me that reference to an “astral plane” over and above the material world, Popper’s World 3 (for example), may not be a bad way to index all that. It is certainly no more mysterious and wondrous than the experience of consciousness itself. Perhaps the “ideas” made manifest in cultural practices exist in an astral plane not very far away from the place where Gottlob Frege and at least some philosophers of mathematics think the truths of logic and mathematics exist (or subsist) before they are discovered. The concept of “zero” is not a material thing. But enough said on that score in this context. This is not “consilient” intellectual territory in which “After all ...” is the best way to open a conversation. The mind/body problem is not solved, any more (here moving to the other side of the fence) than issues of “salvation” are addressed by taking a picture of the brain activity of sinners in a confessional booth.

My main point, however, is that creative and useful science goes on in social science research centers despite the fact that across and within such research institutions there is a conspicuous absence of “consilience” and considerable disagreement about whether the unification of knowledge is even a worthy ideal. Most researchers, even those who are totally out of sympathy with each other and find it difficult to

credit or make sense of what the other is doing, believe that progress is being made on the problem on which they are working. And, I would suggest, in many cases they are right.

THE CRISIS LITERATURE IN THE SOCIAL SCIENCES

Finally, then, here is that second glimpse of the current intellectual scene, this time within the social sciences. If you take a look at the crisis literature in the social sciences, you will find four types of complaints, of which I shall focus on three (see Shweder and Fiske¹⁸).

Complaint #1. Social science generalizations are typically restricted in scope. The modal social science generalization is bound to a particular population studied at a particular historical time in a particular culture, and often restricted as well to the particular method used in the investigations (so-called “method effects”). In other words, as Lee Cronbach²² has noted, in the social sciences “generalizations decay” (as you move from one population to another or across historical eras or across methods). Or, as Donald Campbell²³ has noted, in the social sciences (including psychology, that ambiguously and ambivalently “non-social social science”) “higher-order interactions are the rule, and main effects, *ceteris paribus* generalizations, the rare exception.” (For a sustained critique of the quest for “abstractionism” in the social sciences see Jerome Kagan’s book *Three Seductive Ideas*.²⁴)

Here I might add that, given that “main effects” are the rare exception, it is generally hazardous in the social sciences to rush to generalizations about all human beings. I suspect that Professor Wilson has been tempted in that hazardous direction in his interpretation of animal phobias. I do not think we really know very much about animal phobias around the world. We need much more good ethnographic and experimental evidence on this topic. But I will bet a quarter that when the cross-cultural developmental evidence is actually in it will be far more complicated and qualified than Professor Wilson suggested in his keynote address. Even with the limited evidence that is available, it is not obvious that we should conclude that there are universal biologically driven rules, readily understandable from a Darwinian adaptationist point of view, for the acquisition of specific animal phobias. What we know about animal phobias comes mainly from research done in Europe and North America. In that limited database, 90% of those adults who have animal phobias are women. So even in those populations the inclination is restricted to a small subset of one-half of the members of the species. More importantly, the list of animals that women with phobias fear the most is not obviously predictable from a Darwinian point of view. What does Darwinian theory actually predict about which animals should be on the list of phobic objects (and which shouldn’t) for specific populations of people? North American and European women who have animal phobias are afraid of snakes. And they are afraid of spiders and mice. But they are also afraid of frogs and birds. Yet they are not afraid of wolves or lions or elephants. It seems to me that biological adaptationists (it is all about getting your genes into the next generation) need to tell us a lot more about what their theory actually predicts about the evolution of fears for specific populations. They need to do this before making strong claims about how the current evidence on animal phobias confirms the theory.

Complaint #2. Social science theories and schools of thought do not converge over time. Multiple paradigms persist, and the set of concepts and theories that guide research and the interpretation of evidence are as various today as they were 50 years ago or even 100 years ago.

Complaint #3. Meanings, intentions, ideas, values, emotions, and all other aspects of human consciousness, phenomenological experience, or subjectivity cannot be studied scientifically, because they are not the types of things (observable material entities that can be located in time and space) that science was designed to study. In other words, some social scientists (those who are the most “humanistic”) believe that the subject matter of the social sciences puts them outside the proper realm of science. Professor Wilson’s response to this, of course, is to argue that their subject matter is not what these humanists thought it was and that meanings, intentions, and all the other stuff of consciousness is inherently material: hence, the “matter” of the natural sciences, after all. Lurking behind these types of complaints are one or more presuppositions about the criteria that distinguish mature science from proto-science from non-science from nonsense; and those presuppositions, it turns out, make a big difference for whether one perceives a crisis at all.

For example, Philip Converse² has argued that “a model of science that suggests that either we can, in T.S. Eliot’s words, ‘roll the universe into a ball’ with one grand summary expression like $E = mc^2$, or we are not engaging in science is a false model.” He argues that there is a different “texture” to different fields of rigorous, disciplined inquiry depending on their subject matter.

A related point has been made by Roy D’Andrade.²⁵ D’Andrade presents us with an ethnographic account of the diversity of models and ideals of science that he finds among practicing researchers. He argues

that the sciences contain at least three very different world views, that of the physical sciences, that of the natural sciences, and that of the semiotic sciences; ... that the pursuit of “general laws” is characteristic primarily of the physical sciences; ... that some of the natural sciences, such as biology, have done well despite the fact that they have not found general laws; ... that in the social sciences there is a considerable division between the natural science approach and the semiotic approach [which involves the interpretation of what something “means”] without a reasonable synthesis in view

Of course where D’Andrade reports plural scientific world views and a division in relationship to which no synthesis is in sight between natural science and interpretive social science, Professor Wilson senses that a new age of “consilience” is close at hand.

My answer to all this, as you have perhaps already realized, is to suggest that plurality is inherent in science (just as it is in religion, culture, and society). This is precisely because evidence and logic alone are not sufficient conditions for the development of knowledge systems. Reality testing is a metaphysical act, which relies on various aspects of the imagination, including category systems, background assumptions, metaphors, and so forth. Hence I do not expect scientific debate and controversy about fundamental issues to ever come to an end. Because I do not believe that convergence in belief is a mark of the maturity of a scholarly discipline, I do not worry, as some do worry, about the future of the social sciences.

I believe that either (a) our current account of the nature of the material world is incomplete (because it cannot handle the role of “meaning” without terrorizing or eliminating the concept of meaning itself) or else (b) human beings have a nature that

takes them beyond the material world, in which case reference to other worlds (Popper's World 2, the mental world, and Popper's World 3, the world of "ideas"²⁶) must play a central part in any science of human action. Given the central role of meaning as a causal factor for human beings, the restriction of scope of generalizations in the social sciences and humanities is thus entirely expectable. And the discovery of such meaning-dependent or context-dependent regularities is highly respectable because it honors the truth.

THE "QUEEP" AND THE "DEEP" OF LIFE: MEANING AND DIVERGENCE IN SCIENCE

Here is a small but powerful example of what happens when meaning enters our nervous system. The example comes from Benjamin Lee Whorf and can be found in his writings in *Language, Thought and Reality*.²⁷ (p. 257) Whorf is famous for his work on "linguistic relativity," but he was fully aware of the existence of some species typifying affective or synesthetic responses to stimuli of various kinds. He notes that the semantically meaningless sound pattern "queep" elicits a universal set of affective or "feeling-tone" associations when it interacts with the human nervous system. Whether you are in the highlands of New Guinea or in Manhattan, whether you speak English, Guugu Yimidhirr, or Russian, "queep," the nonsense syllable, is judged to be "fast" (rather than "slow"), "sharp" (rather than "dull"), "light" (rather than "dark"), "narrow" (rather than "wide"). Our affective response to "queep" is automatic and may well be preprogrammed, a feature of our common biology.

But notice what happens when semantic meaning enters the picture. Whorf asks us to consider the sound pattern "deep." As a material thing (and as a pure sound pattern) "deep" is very similar to "queep." For speakers of languages in which "deep" is a nonsense syllable (that is, most languages of the world), the sound pattern "deep" elicits exactly the same set of affective or "feeling-tone" associations ("fast," "sharp," "light," "narrow") as does "queep." But "deep" is not just a physical entity (or pure sound) for English speakers. It is a word in our language. It has semantic meaning. And that meaning totally overrides its impact as pure physical sound (the sound merely becomes the vehicle of the meaning) and completely reverses our nervous system response. For speakers of English, and only for English speakers, "deep" is judged to be "slow," "dull," "dark," and "wide." That is one of the reasons that so many interpretive social scientists are prepared to argue for the duality of human nature, of meaning and mind over and above mechanism and body, of the "angel" over and above the "beast." There is something more to our nature than just the material realities that meet the ear (or the eye) plus the nervous system that is common to us all. The challenge for the humanities and the social sciences has always been to get "ideas" and our capacity to be sensitive to what things "mean" into the picture without completely reducing the "mental" to the "material" or "matterings" to "matter." Contemplating a human being as "a hairless gorilla with a big brain" does not quite do the trick.

Finally, let me conclude by telling you why I do not view the social sciences as "soft" with their feet in the ground in comparison to the "hardness" of the natural sciences, with their foundations set in bedrock. Some do worry, however, about be-

ing soft or about being too low on the hardness hierarchy. Thus, when I talk to psychologists, sociologists, or cultural anthropologists, they sometimes confess that what they do is soft science (if they are willing to grant that it is science at all) and that the real, hard scientists are the physical scientists (or perhaps the microbiologists). When I go talk to the physical scientists who are meteorologists or geophysicists, they tell me that what they do is soft science and that the real hard scientists—those closest to bedrock reality—are the physicists. And so it goes. The experimental physicists, feeling a bit soft, send me in the direction of the theoretical physicists, who point me to the mathematicians, where the linear algebraists, feeling like their feet are in the sand, point me to the hard cutting edge, the topologists, who more often than not tell me that ultimately their work is intuitive and discretionary, and basically mystical. So, for starters, bedrock is hard to find. And that is where I will end.

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